

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Previously Presented) A membrane electrochemical generator comprising:
 - a multiplicity of reaction cells and a multiplicity of cooling cells, wherein each of said cooling cells is interposed between two reaction cells, each of said reaction cells comprises a metallic reticulated current collector, an active area, and is delimited by two bipolar sheets,
 - each of said cooling cells comprises a reticulated conductive element and is delimited by two bipolar sheets,
 - each of said bipolar sheets comprises a metallic central body having a dimension larger than the active area of the reaction cells and a frame made of a polymeric material,
 - said frame comprises:
 - a first feed opening and a second feed opening for the passage of gaseous reactants,
 - a first discharge opening and a second discharge opening for discharging reaction products,
 - an opening for feeding a coolant into a cooling cell, and
 - a multiplicity of channels each having two ends, wherein one end opens to the active area of the reaction cell while the other end opens at one of the first feed

opening, the second feed opening, the first discharge opening, and the second discharge opening.

2. (Previously Presented) A generator of claim 1, wherein said polymeric material is of the thermoplastic type.

3. (Previously Presented) A generator of claim 1, wherein said polymeric material is of the thermosetting type.

4. (Previously Presented) A generator of claim 1 wherein said frame is integrated with said central metallic body by moulding or gluing.

5. (Previously Presented) A generator of claim 4 wherein
said channels are formed using a method comprising steps of applying leachable elements in the shape of the channels on the metallic central body, molding a polymeric frame on the metallic central body, and dissolving the leachable element in a chemical solution.

6. (Previously Presented) A generator of claim 5 wherein said leachable elements are made of aluminum and said chemical solution is caustic soda.

7. (Previously Presented) A generator of claim 4 wherein said metallic central body is previously provided with preformed elements having the shape of said channels.

8. (Previously Presented) A generator of claim 7 wherein said preformed elements are made of metal or plastics.

9. (Previously Presented) A generator of claim 8 wherein said metal is stainless steel.

10. (Previously Presented) A generator of claim 1 wherein said frame consists of two preformed components containing said channels.

11. (Previously Presented) A generator of claim 10 wherein each of said two preformed components constitutes a face of said frame.

12. (Previously Presented) A generator of claim 10 wherein said two components are assembled with each other and with said metallic central body by thermal bonding or gluing with an adhesive.

13. (Previously Presented) A generator of claim 4 wherein said metallic central body has a micro-rough and chemically reactive surface obtained by sandblasting or chemical attack or both.

14. (Previously Presented) A generator of claim 4 wherein said metallic central body comprises openings in the peripheral zone covered by the frame and having materials in the frame penetrating the openings.

15. (Previously Presented) A generator of claim 1 wherein in a filter-press configuration,

said frames on bipolar sheets are adjacent to each other so that corresponding feed openings in each frame are aligned to form longitudinal feed manifolds, corresponding discharge openings in each frame are aligned to form longitudinal discharge manifolds.

16. (Previously Presented) A generator of claim 1 wherein said frame further comprises a multiplicity of holes where tie-rods for tightening said electrochemical generator pass through.

17. (Previously Presented) A generator of claim 1 wherein said metallic central body comprises a multiplicity of first calibrated holes for the passage of said gaseous reactants and a multiplicity of second calibrated holes for the discharge of reaction products.

18. (Previously Presented) A generator of claim 17 wherein said first calibrated holes are aligned with channels of said frame and that said second calibrated holes are aligned with said collecting channels of said frame.

19. (Previously Presented) A generator of claim 17 wherein said first and second calibrated holes are placed about 1 mm from the inner edge of said frame.

20. (Previously Presented) A generator of claim 17 wherein said first calibrated holes have a diameter between 0.1 and 5 mm.

21. (Previously Presented) A generator of claim 1 wherein said metallic central body comprises a multiplicity of calibrated holes for injecting water into said reaction cells, said holes are placed about 1 mm from the inner edge of said frame.

22. (Previously Presented) A generator of claim 21 wherein said aligned calibrated holes are aligned with water distributing channels.

23. (Previously Presented) A generator of claim 1 wherein said central body comprises a multiplicity of calibrated holes for distributing the gaseous reactants, a multiplicity of calibrated holes for injecting water and a multiplicity of calibrated holes for discharging the products, the exhausts and the residual injected water, each of said calibrated holes positioned in correspondence to one of said distributing or of said collecting channels.

24. (Previously Presented) A generator of claim 23 wherein said calibrated holes for distributing the gaseous reactants and said calibrated holes for discharging the products, the exhausts and the residual injected water are placed about 1 mm from the edges of said frame.

25. (Canceled)